

Helichrysum bracteatum, Andr. Stout annual, 1.5 – tall, some what branched, the terete sts. nearly or quite glabrous. lvs. many and rather large, oblong-lanceolate, narrowed to a short petiole, entire, green: heads terminating the branches, 1-1.5 in. across, yellow or orange, the short and obtuse involuere-scales imbricated.

Although mineral nutrients are needed in relatively very small quantities for good plant growth, their deficiencies cause great disorders in the physiological and metabolic processes of the plant (**Kanwer and Dhingra, 1962**). The intensive cropping without adequate conservation of soil fertility through balanced fertilization may be responsible for deficiencies of most nutrients, especially mineral nutrients in plants grown in Egypt, (**Sillanpaa, 1982**).

The role of calcium in membrane stability is not only of importance in ion uptake but also in other metabolic processes. Typical features of senescence for example, are similar to these of Ca deficiency and can be retarded by Ca^{2+} . Also, a number of enzymes are activated by the Ca-calmodulin complex including cyclic nucleotide phosphodiesterase, adenylate cyclase, membrane bound Ca^{2+} -ATP ase, NAD-Kinase.

The silica fertilizers include soluble silicates, sodium silicate and calcium silicate slags are used in soil low in Si to improve crop yields and quality.

Growth retardants are organic compounds that restrict stem elongation without causing changes in the morphology or



development of other plant parts. Growth retardants also may enhance foliage color, add to leaf thickness and improve flower quality and vase life. Also, improve the tolerance of plants to moisture stress and air pollution.

It is rather impossible and improbable to give a universal statement on the use of any growth retardant. The reaction (i.e. sensitivity) of a certain cultivar is a factor that affects effectiveness of any growth retardant used (Carter, 1980; Wilfret, 1988 and Gao *et al.*, 1991).

The objective of this study was to investigate the effect of spraying with some mineral nutrients (cheleate calcium, calcium bicarbonate and sodium silicate) and some growth retardants (Paclobutrazol and Dikegulac- sodium) on growth, flowering and chemical composition of two genera of winter flowering annuals *Limonium sinuatum* L. and *Helichrysum bracteatum* Andr. in order to overcome to the geotropic bending and prevent flower stem curvature.

